



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,609	08/31/2001	Soren Riis	1030.40616X00	7485

20457 7590 01/10/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-9889

EXAMINER

ALBERTALLI, BRIAN LOUIS

ART UNIT	PAPER NUMBER
----------	--------------

2655

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,609

Applicant(s)

RIIS ET AL.

Examiner

Brian L. Albertalli

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/22/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed September 9, 2004 have been fully considered but they are not persuasive.

Regarding claims 1, 4, and 9, the applicant argues (page 10, lines 12-20) that the relied upon section of Wheatley et al. (column 4, lines 17-25) discloses generating a phonetic feature sequence which relates to an audio pronunciation and that claims 1, 4, and 9 relate to generating multilingual phoneme symbols which relate to symbols.

The relied upon section of Wheatley et al., discloses generating a phonetic feature sequence, or other pronunciation representations (see specifically column 4, lines 24-25). Wheatley et al. further disclose that the output of the text-to-phoneme module (Boltzmann machine) can represent a sequence of N phonemes (column 6, lines 28-29). This sequence of phonemes generated from the text is equivalent to sequence of phoneme symbols, as they represent the phonemes generated from the input text. As stated in the previous Office Action, although Wheatley et al. do not disclose that the sequence of phonemes are multilingual, the international phonetic alphabet is notoriously well known in the art, therefore modifying Wheatley et al. to generate a sequence of multilingual phonemes would have been obvious to one of ordinary skill in the art at the time of invention.

Furthermore, as stated in claims 1, 4, and 9, Wheatley generates the phonetic feature sequence, or sequence of phoneme symbols, from the text, then uses that set of symbols to generate pronunciations (HMM recognition models) to be compared to

Art Unit: 2655

acoustic input. Wheatley et al. do not, as implied in the argument, generate an audio feature sequence directly from the text that can be used for comparison with acoustic input. The text is converted to a symbolic representation, whether that representation is a phonetic feature sequence or a sequence of N phonemes, and the symbolic representation is then used to generate pronunciations (HMM recognition models) for comparison with acoustic input (see Fig. 1, Boltzmann machine 13 creates feature sequences 15, which are used to generate the HMM recognition models 16).

The argument that Wheatley et al. do not disclose generating sequences of phoneme symbols based on text input by means of a text-to-phoneme module, therefore, is not persuasive.

Still further, in response to applicant's argument that the references fail to show certain features of applicant's invention (page 11, lines 1-5), it is noted that the features upon which applicant relies (i.e., that the allowable pronunciations are determined by the principle of branched grammar) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claims 3, 7, and 12, applicant's arguments that Wheatley et al. do not disclose deriving the text input from a database containing user entered strings (page 11, lines 8-10), fail to comply with 37 CFR 1.111(b) because they amount to a general

Art Unit: 2655

allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Regarding claims 2, 5, 6, 8, 10, 11, and 13, applicant's arguments that non of the cited references disclose text input is processed letter by letter, and wherein a neural network provides an estimate of the posterior probabilities of the different phonemes for each letter, or where the neural network is a standard fully-connected feed forward multi-layer perceptron neural network (page 12, lines 16-20), fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Therefore, the rejections made in the previous Office Action stand.

Response to Amendment

The amendments to the specification, title, and abstract overcome the objections made in the previous Office Action. The objections to the specification, title, and abstract are therefore withdrawn.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4, 7, 9, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatley et al. (U.S. Patent 5,212,730).

In regard to claim 1, Wheatley et al. discloses a method of recognizing speech using text derived recognition models.

Text is provided from a text database (Fig. 1, element 12) (column 4, lines 8-16).

An acoustic input (24) accepts spoken input (column 4, lines 55-57).

Sequences of phoneme symbols based on the text input are generated by a text to phoneme module (Boltzmann machine 13, column 4, lines 17-25).

Pronunciations are produced in response to the sequences of phoneme symbols (HMM recognition model generator (16) generates HMM recognition models based on phonetic models derived from a speech database (18, column 4, lines 44-54)).

The pronunciations are compared with the acoustic input in order to find a match (by HMM recognition engine 26, column 4 lines 58-68).

3. Wheatley et al. further discloses that the method generates several phonetic sequences corresponding to different pronunciations (column 4, lines 26-36). Wheatley et al. does not disclose that the phoneme symbols are multilingual phoneme symbols. The use of the International Phonetic Alphabet is very well known in the art. It would

Art Unit: 2655

have been obvious to one of ordinary skill in the art at the time of invention to modify Wheatley et al. so that the different pronunciations generated were representative of pronunciations in a plurality of languages, so that the method could be used in different countries.

4. In regard to claims 4 and 9, Wheatley et al. discloses a system that has:
 - a text database (Fig. 1, element 14) for providing text input;
 - a transducer means (24) for receiving an acoustic input;
 - a text to phoneme module (13) that generates sequences of phoneme signals;
 - a pronunciation lexicon module (16) that generates pronunciations in response to the sequences of phoneme signals;
 - and a recognizer (26) for comparing the pronunciations generated by the pronunciation lexicon module (16) with the acoustic input.
5. Wheatley et al. further discloses that generates several phonetic sequences corresponding to different pronunciations (column 4, lines 26-36). Wheatley et al. does not disclose that the phoneme symbols are multilingual phoneme symbols. The use of the International Phonetic Alphabet is very well known in the art. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Wheatley et al. so that the different pronunciations generated were representative of pronunciations in a plurality of languages, so that the method could be used in different countries.
6. Wheatley et al. does not disclose the system is implemented in a communication terminal. It would have been obvious to one of ordinary skill in the art at the time of

Art Unit: 2655

invention to implement the system in a communication terminal, in order to communicate to another communication terminal without using any keystrokes (e.g. the system could be used for hands free dialing).

7. In regard to claims 3, 7, and 12, Wheatley et al. discloses that the text input is derived from user entered text strings (column 4, lines 8-11).

8. Claims 2, 5-6, 8, 10-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheatley et al., as applied to claims 1, 4, and 9, above, in view of Karaali et al. (U.S. Patent 5,930,754), and further in view of Kuhn et al. (U.S. Patent 6,029,132).

9. In regard to claims 2, 5, and 10, Wheatley et al. does not disclose that the text input is processed letter by letter and that a neural network provides an estimate of the posterior probabilities of the different phonemes of the user.

10. Karaali et al. discloses a system for phonetic generation from text information using a neural network (Fig 20, 2004).

11. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Wheatley et al. to use the neural network method of converting text to phonemes, as disclosed by Karaali et al., in order to eliminate the need to store pronunciation information, thereby saving storage space, as taught by Karaali et al. (column 18, lines 42-46).

12. Wheatley et al. and Karaali et al. do not disclose that the text is processed letter by letter.

13. Kuhn et al. discloses a method in which a text input that is to be converted to speech is processed letter by letter to generate the probabilities of different phonemes for each letter (Fig. 2 and column 3, lines 17-25).

14. It would have been obvious to one of ordinary skill in the art at the time of invention to further modify Wheatly et al. and Karaali et al. so that the neural network used the probabilities generated in Kuhn et al., in order to produce a variety of pronunciations so that a previously unused word would be recognized.

15. In regard to claim 6 and 11, Karaali et al. discloses that the neural network is a feed-forward multi layer neural network (column 17, lines 26-33 and column 19, lines 41-42).

16. In regard to claim 8 and 13, neither Wheatly et al., Karaali et al., or Kuhn et al. disclose that the database containing user entered text strings is an electronic phonebook including phone numbers and name labels. It would have been obvious to one of ordinary skill in the art at the time of invention to make the text database an electronic phonebook database so one could find phone numbers of people quickly and easily via a speech command, without using text entry.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L Albertalli whose telephone number is (703) 305-1817. The examiner can normally be reached on Mon - Fri, 8:00 AM - 5:30 PM, every second Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703) 305-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2655

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BLA 1/5/05



TĀLVALDIS IVARS ŠMITS
PRIMARY EXAMINER